

Patent claims

1. Component with a piezoelectric functional layer, comprising

- a substrate (S)

- a first electrode layer (E1)

- a structured growth layer (W) that is thin relative to said first electrode layer

- a piezoelectric layer (P)

- a second electrode layer (E2).

2. Component in accordance with claim 1,

in which said growth layer (W) is applied to said first electrode layer (E1), is structured relative to said first electrode layer, and has a smaller surface area than the latter.

3. Component in accordance with claim 1 or 2,

in which said piezoelectric layer (P) completely covers said growth layer (W), overlaps the latter along its entire circumference, and encloses [it] there with said first electrode layer (E1).

4. Component in accordance with any of claims 1 – 3,

in which said growth layer (W) is selected depending on said piezoelectric layer (P) such that it supports its ordered growth.

5. Component in accordance with any of claims 1 – 4,
in which said growth layer (W) is selected from Au, Mo, W, Pt, Si₃N₄, sapphire,
spinel, Si, Ba₃TiO₃, ZrO₂, MgO, and TiO₂.

6. Component in accordance with any of claims 1 – 5,
in which said piezoelectric layer (P) is selected from AlN and ZnO.

7. Component in accordance with any of claims 1 – 6,
in which said first electrode layer (E1) has a multilayer structure that includes a
titanium layer as a different layer from the upper-most layer of the multilayer structure.

8. Component in accordance with any of claims 1 – 7,
in which an acoustic mirror (AS) is arranged between substrate (S) and first
electrode layer (E1).

9. Component in accordance with any of claims 1 – 7,
including a multilayer structure with a plurality of piezoelectric layers (P),
between each of which is arranged an additional electrode layer (E) and an additional
growth layer (W).

10. Component in accordance with claim 9, embodied as a piezoelectric actuator.

11. Component in accordance with any of claims 1 – 8,
embodied as an arrangement with at least one resonator working with bulk
acoustic waves.

12. Method for producing a component that includes at least one resonator
working with bulk acoustic waves, with the steps

- applying a first electrode layer (E1) to a substrate (S)
- structuring said first electrode layer at least to a first electrode region (E11)
- applying a growth layer (W) over said first electrode region (E11)
- structuring said growth layer such that a growth region remains exclusively over
said first electrode region and has a smaller surface area than said first electrode region
(E11)
- whole-surface growth of a piezoelectric layer (P) under conditions that make
possible a crystal-axis oriented growth over said growth region
- structuring of said piezoelectric layer (P) such that it completely covers said
growth region, overlaps it laterally along its entire circumference, and encloses [it] there
with said first electrode layer (E1)
- application and structuring of a second electrode layer (E2).

13. Method in accordance with claim 9,
in which the structuring of said growth layer (W) occurs wet-chemically.

14. Method in accordance with claim 9 or 10,
in which a gold layer is vapor-deposited as said growth layer (W).

5 15. Method in accordance with any of claims 9 – 12,
in which the growth of said piezoelectric layer (P) occurs by means of a CVD or
PVD process.